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patentdocket@oblon.com

oblonpat@oblon.com

jgardner@oblon.com



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/541,206
Filing Date: July 05, 2005
Appellant(s): SCHMIDT-THUMMES ET AL.

Stefan U. Koschmieder
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 13, 2009 appealing from the Office action mailed September 3, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,910,534	Ostrowicki et al.	6-1999
4,458,057	Basu	7-1984
4,985,514	Kimura et al.	1-1991
6,184,321	Egraz et al.	2-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostrowicki et al. (U.S. Patent 5,910,534) in view of Basu (U.S. Patent 4,458,057).

With regard to the limitations of claim 1, Ostrowicki discloses a process for preparing stable, aqueous dispersions of copolymers obtainable by emulsion polymerisation of

- a) from 20 to 80 parts by weight of conjugated aliphatic dienes,
- b) from 20 to 80 parts by weight of vinyl aromatic compounds,
- c) from 0.1 to 10 parts by weight of ethylenically unsaturated carboxylic acids and/or dicarboxylic acids,

d) from 0 to 20 parts by weight of ethylenically unsaturated carboxylic acid nitrites
and

e) from 0 to 20 parts by weight of copolymerisable vinyl compounds differing from
component b)

in the presence of water and of 0.1 to 5 parts by weight of emulsifiers, referred to
100 parts by weight of components a) to e), and in the presence of water-soluble
initiators, the emulsifiers used being

f) sulphuric acid half-esters of ethoxylated fatty acid alcohols and/or

g) salts of esters and half-esters of alkylpolyoxyethylene sulposuccinates, g)
salts of esters and half-esters of alkylpolyoxyethylene sulposuccinates,

moreover with 15 to 85 wt. % of the total of the emulsifiers used being added
within the time in which up to 40% of the overall conversion of the components used is
attained, and with 1 to 50% of the carboxylic acid groups contained in component c)
being neutralized by **the addition of bases** during the emulsion polymerization (col. 1,
line 65 through col. 2, line 25).

The only difference between the claimed process for preparing a stable aqueous
copolymer dispersion and the prior art is that the partial neutralization of the
ethylenically unsaturated carboxylic acids and/or dicarboxylic acids occurs prior to the
polymerization.

Basu discloses that a process for making vinyl polymer particles that are
spherical, highly porous and of uniform size and substantially no polymer buildup on the
reactor surfaces. A dispersion or emulsion is first formed with high agitation comprised

of an aqueous medium containing a water-insoluble suspending or dispersing agent, the monomer or monomers to be polymerized, a monomer-soluble free radical yielding catalyst, and a surfactant or surfactant system. The dispersion is neutralized with an alkali and then polymerized with stirring to a conversion of about 10% to about 30% and then continuing the reaction to completion with increased stirring, the stirring in both instances being no greater than that used in making the dispersion or emulsion. The dispersing agent employed comprises an unneutralized crosslinked interpolymer of one or more carboxylic acid monomers with a polyunsaturated compound having a plurality of terminally unsaturated polymerizable groups (abstract).

Basu discloses that after forming the dispersion or emulsion of the polymerization reaction ingredients and **prior to polymerization** thereof, it is necessary, and most important to partially neutralize the reaction medium, and mainly the dispersing agent therein, in order to insure the stabilization of the monomer droplets therein during the subsequent stirred reaction period. This neutralization is accomplished by adding to the reaction medium, **prior to the start of the polymerization reaction**, a water-soluble base, such as sodium hydroxide, in order to adjust the pH of said medium in a range of about 4.0 to about 7.0 (col. 3, line 65 through col. 4, line 7).

Both references are analogous art because they are from the same field of endeavor concerning the processes for producing stable aqueous dispersions of vinyl copolymers.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ that the partial neutralization of the

ethylenically unsaturated carboxylic acids and/or dicarboxylic acids occurs prior to the polymerization as taught by Basu in Ostrowicki's process for producing stable aqueous dispersions of copolymers in order to insure the stabilization of the monomer droplets therein during the subsequent stirred reaction period (US'057, col. 3, line 65 through col. 4, line 7), and thus to arrive at the subject matter of instant claim 1.

With regard to the limitations of claims 2-8, Ostrowicki discloses that the aqueous dispersions are prepared as follows: Distilled water at approximately 85°C, chelating agent, a portion of emulsifier and initiator and polymer seed latex (having an average particle size of approximately 35 nm, for example, based on styrene and acrylate) are placed in a polymerization vessel and heated to about 85°C, with stirring. The polymerization vessel is flushed with nitrogen and the inflows of monomers, emulsifiers, bases, initiators and molecular-weight controllers are started and maintained over the duration of the polymerization. The reaction temperature is then maintained for approximately 1 to 4 hours. At this point the latex has a solids content of about 50%. The pH value is adjusted to 7.0 by means of ammonia.

The aqueous dispersions of copolymers based on aliphatic, conjugated dienes and vinyl aromatic compounds have a solids content (proportion of polymer) preferably of from 40 to 65%, in particular from 45 to 60% (col. 5, lines 4-22).

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostrowicki et al. (U.S. Patent 5,910,534) in view of Kimura (U.S. Patent 4,985,514) or Egraz et al. (U.S. Patent 6,184,321).

The disclosure of the Ostrowicki's reference has been disclosed above.

Ostrowicki discloses that it can be of advantage at the very beginning of the polymerisation to add to the reaction mixture up to 15 wt. % of the total quantity of emulsifiers used and then to add the remaining quantity, that is, up to 75 wt. %, of the total quantity of emulsifiers used within the time in which up to 40% of the overall conversion of the components used is attained (col. 4, lines 29-35).

The only difference between the claimed process for preparing a stable aqueous copolymer dispersion and the prior art is that the partial neutralization of the ethylenically unsaturated carboxylic acids and/or dicarboxylic acids occurs prior to the polymerization.

Kimura discloses the method is attained by having 10 to 50 mol %, preferably 10 to 40 mol %, of the acid group-containing monomer in the monomer component **neutralized in advance** of subjecting the monomer component to aqueous solution polymerization and subsequently adding basic substances (col. 7, lines 40-47).

Egraz exemplifies that acrylic acid may be partially pre-neutralized by, e.g., sodium hydroxide prior to the polymerization (Example 1, lines 37-53).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ that the partial neutralization of the ethylenically unsaturated carboxylic acids and/or dicarboxylic acids occurs **prior to the polymerization** as taught independently by Kimura and Egraz in Ostrowicki's process for producing stable aqueous dispersions of copolymers with reasonable expectation of success because it has been found that when the monomer component having the acid group-containing monomer unneutralized is polymerized by the use of an ordinary

radical polymerization initiator, the produced polymer contains residual monomer in a large amount. The water absorbent polymer excelling in absorption properties and containing residual monomer only in a small amount is obtained only when the production is carried out by the method, namely subjecting the monomer component having the acid group-containing monomer **neutralized in advance** to a ratio falling in the specific range **to aqueous solution polymerization** (US'514, col. 7, line 65 through col. 8, line 13), and thus to arrive at the subject matter of instant claims 9 and 10.

With regard to the limitations of claims 11 and 12, Ostrowicki exemplifies that the aqueous monomer mixture comprises styrene, acrylic acid and butadiene (Examples 3-10, col. 9 through col. 13).

(10) Response to Argument

It appears that the focal Applicants argument resides in the contention that Appellants provided a side-by-side comparison of the claimed invention with the closest prior art (i.e., Ostrowicki) in the original specification. Appellants have shown that the presently claimed invention is substantially superior in comparison to the process of Ostrowicki as evidenced by a reduction in coagulum formation. The Office failed to give Appellants' factual evidence sufficient weight when determining patentability (page 5, the last paragraph; pages 7-8). Inventive Example 1 forms substantially less coagulum in comparison to the Comparative Example. Inventive Example 1 forms 80 gram of fine coagulum whereas the Comparative Example forms 890 gram of fine coagulum (pages 6-7 the bridging paragraph).

It is worth to mention the following. As it was mentioned by Appellants in response filed May 30, 2008 "When the product of the inventive and comparative examples is isolated, the coagulum formed in the inventive example is at least 35% less than the amount of coagulum formed in Comparative Example 1 (compare 105 ppm versus 165 ppm, respectively). Reducing the amount of coagulum permits faster filtration and more efficient the manufacture of the desired polymer (page 11, 4th paragraph)." It means that the only inventive example of the specification shows the presence of 105 ppm coagulum. It is noted that all examples of Ostrowski's reference practically do not contain any coagulum (see col. 9-13 of the tables wherein the amounts of coagulate is from 0.1% to 0.38%), which also are free of reaction vessel deposits (see the row titled "deposit in vessel" of each of the tables in col. 9-13).

Therefore, it is not clear which positive effect and unexpected result could be obtained by using the Applicants invention wherein the partial neutralization of the monomers c) takes place before the polymerization?

It is worth to mention that according MPEP 716.01(c): "Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191,196 (Fed. Cir. 1984) ("It is well settled that unexpected results must be established by factual evidence." "[A]ppellants have not presented any experimental data showing

that prior heat-shrinkable articles split. Due to the absence of tests comparing appellant's heat shrinkable articles with those of the closest prior art, we conclude that appellant's assertions of unexpected results constitute mere argument."). See also *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *Ex parte George*, 21 USPQ2d 1058 (Bd. Pat. App. & Inter.1991).

In our case, unexpected results must be established between Ostrowski's process for preparing a stable aqueous copolymer dispersion (it is the closest prior art) and the claimed process, wherein the partial neutralization of the monomers c) takes place before the polymerization.

Furthermore it is noted that the dates of the only inventive example of the specification are not commensurate with the scope of the claims because the limitations of claim 1 concern huge numbers of species describing conjugated aliphatic monomers, vinylaromatic compound monomers, ethylenically unsaturated carboxylic acid monomers, etc. while Example 1 discloses the usage only acrylic acid, styrene and butadiene.

In response to Applicants argument that there is no evidence of record that the "reaction vessel deposits" described in Ostrowicki are coagulum, and in contrast, Ostrowicki separately describes deposits and "coagulate" in the tables describing the Ostrowicki examples (page 8) it is noted that Ostrowicki clearly discloses that the optimum is determined from a **minimal quantity of deposits (coagulate) during the polymerization**, the achievement of the required final particle size and particle

distribution and the maximum stability to multivalent ions of the resulting polymer dispersion (col. 4, lines 39-44).

Applicants failed to rebut *prima facie* case of obviousness and totally void of any mention of the name of Ostrowicki in the experimental part of the specification.

In response to Applicants argument that the rejection of claims 9-12 as obvious over Ostrowicki in combination with Kimura or Egraz should be withdrawn in view of Appellants' showing that partial neutralization of a monomer mixture prior to polymerization provides a product having substantially reduced coagulum (pages 8-9), it is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

It is further noted that "The motivation in the prior art to combine references does not have to be identical to that of the applicant to establish obviousness, i.e. it is not required for a finding of obviousness that motivation of the skilled artisan be the same as an applicant motivation", *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1312 (Fed. Cir. 1996) (holding there is sufficient motivation to combine teachings of prior art to achieve claimed invention where one reference specifically refers to the other). Therefore, it is well settled that for a finding of obviousness under § 103 the prior art need not disclose the same motivation as disclosed by an applicant.

Thus the rejection under 35 USC 103(a) cannot be withdrawn and remains in force.

Art Unit: 1796

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Michael M. Bernshteyn

/Michael M. Bernshteyn/

Examiner, Art Unit 1796

Conferees:

David W. Wu

/David Wu/

Supervisory Patent Examiner, Art Unit 1796

Anthony McFarlane

/Anthony McFarlane/